

Long Travel Industrial Linear Stages

IDL-LM Series

mks | Newport

The long-travel IDL-LM industrial-grade linear stages boast the highest load capacity and speed of all linear motor stages with a wide variety of sizes and travels to choose from, making it well-suited for demanding production environments. They are also known for their outstanding accuracy and improved pitch and yaw specifications.

Platform Sizes, Travel Ranges & Load Capacities for Popular Industrial Applications

The various sizes of width, travel range and load capacities of the IDL-LM family are available to fit numerous applications. Given the variety, these stages are directly stackable with each other, minimizing design and assembly time.

Easy Direct Mounting of XY Stack Configurations

IDL-LM stages feature both imperial and metric mounting hole patterns allowing for flexible mounting.

Reliable Stage Delivery

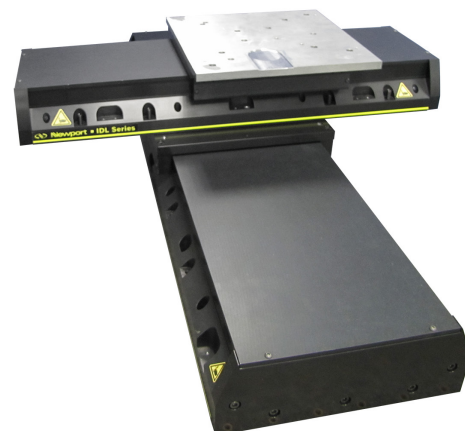
Just like any other Newport product, the IDL-LM series can be ordered both from stock or under a blanket schedule. This ensures that OEMs meet their commitments.



Product Features

- Built for industrial environments with debris protection, high throughput & reliability
- High-efficiency, non-contact, ironless linear motor for fast motion & speed stability
- Extended travel and high load capacities to fit different applications
- Improved Pitch and Yaw Specifications
- Quick and reliable delivery based on customers' production needs

Base Material	Recirculating caged ball bearings
Drive mechanism	Ironless Linear motor
Feedback	Linear steel scale with 20 µm pitch
Limit Switches	Positive and Negative End-Of-Run -5 V
Origin	Optical at center of travel
Cable	5 m, optional cable management



IDL-LM Series

Specifications for IDL

IDL 165 Spec Table	IDL165-100LM	IDL165-200LM	IDL165-300LM
Travel Range	100 mm	200 mm	300 mm
Maximum Speed	2000 mm/s	2000 mm/s	2000 mm/s
Minimum Incremental Motion	0.050 μm	0.050 μm	0.050 μm
Maximum Continuous Force	68 N	68 N	68 N
Maximum Peak Force	289 N	289 N	289 N
Centered Load Capacity	450 N	450 N	450 N
Accuracy*	$\pm 2.0 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.0 \mu\text{m}$
Bi-directional Repeatability	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$
Pitch	$\pm 15 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$
Compliance in Pitch	0.4 $\mu\text{rad/Nm}$	0.4 $\mu\text{rad/Nm}$	0.4 $\mu\text{rad/Nm}$
Yaw*	$\pm 15 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$
Compliance in Yaw	0.4 $\mu\text{rad/Nm}$	0.4 $\mu\text{rad/Nm}$	0.4 $\mu\text{rad/Nm}$
Compliance in Roll	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$
Origin Repeatability	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$
Cable Length	4.5 m	4.5 m	4.5 m
Thread Type	M6	M6	M6
Width	165 mm	165 mm	165 mm
Weight	8.7 kg	10 kg	12 kg
MTBF	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)
RoHS	Compliant	Compliant	Compliant

* Provided are guaranteed specifications.

Typical specifications are 2 x better in general. For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com

IDL 225 Spec Table	IDL225-200LM	IDL225-300LM	IDL225-400LM	IDL225-500LM	IDL225-600LM	IDL225-1000LM	IDL225-1200LM
Travel Range	200 mm	300 mm	400 mm	500 mm	600 mm	1000 mm	1200 mm
Maximum Speed	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s
Minimum Incremental Motion	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm
Maximum Continuous Force	136 N	136 N	136 N	136 N	136 N	136 N	136 N
Maximum Peak Force	578 N	578 N	578 N	578 N	578 N	578 N	578 N
Centered Load Capacity	1000 N	1000 N	1000 N	1000 N	1000 N	1000 N	1000 N
Accuracy*	$\pm 2.0 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.3 \mu\text{m}$	$\pm 2.7 \mu\text{m}$	$\pm 3.0 \mu\text{m}$	$\pm 4.3 \mu\text{m}$	$\pm 5.0 \mu\text{m}$
Bi-directional Repeatability	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.5 \mu\text{m}$	$\pm 0.5 \mu\text{m}$
Pitch	$\pm 20 \mu\text{rad}$	$\pm 25 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 35 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 55 \mu\text{rad}$	$\pm 65 \mu\text{rad}$
Compliance in Pitch	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$	0.55 $\mu\text{rad/Nm}$
Yaw*	$\pm 20 \mu\text{rad}$	$\pm 25 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 40 \mu\text{rad}$
Compliance in Yaw	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$
Compliance in Roll	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$	0.7 $\mu\text{rad/Nm}$
Origin Repeatability	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$
Cable Length	5 m	5 m	5 m	5 m	5 m	5 m	5 m
Thread Type	M6	M6	M6	M6	M6	M6	M6
Width	225 mm	225 mm	225 mm	225 mm	225 mm	225 mm	225 mm
Weight	25 kg	26.5 kg	31.9 kg	33.8 kg	35.8 kg	45 kg	56 kg
MTBF	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)
RoHS	Compliant	Compliant	Compliant	Compliant	Compliant	Compliant	Compliant

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IDL-LM Series

Specifications for IDL

IDL 280 Spec Table	IDL280-300LM	IDL280-400LM	IDL280-500LM	IDL280-600LM	IDL280-700LM	IDL280-1000LM	IDL280-1200LM
Travel Range	300 mm	400 mm	500 mm	600 mm	700 mm	1000 mm	1200 mm
Maximum Speed	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s
Minimum Incremental Motion	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm	0.050 μm
Maximum Continuous Force	265 N	265 N	265 N	265 N	265 N	265 N	265 N
Maximum Peak Force	1248 N	1248 N	1248 N	1248 N	1248 N	1248 N	1248 N
Centered Load Capacity	1500 N	1500 N	1500 N	1500 N	1500 N	1500 N	1500 N
Accuracy*	$\pm 2.0 \mu\text{m}$	$\pm 2.3 \mu\text{m}$	$\pm 2.7 \mu\text{m}$	$\pm 3.0 \mu\text{m}$	$\pm 3.3 \mu\text{m}$	$\pm 4.3 \mu\text{m}$	$\pm 5.0 \mu\text{m}$
Bi-directional Repeatability	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.5 \mu\text{m}$	$\pm 0.5 \mu\text{m}$	$\pm 0.5 \mu\text{m}$
Pitch*	$\pm 25 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 35 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 45 \mu\text{rad}$	$\pm 55 \mu\text{rad}$	$\pm 60 \mu\text{rad}$
Compliance in Pitch	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$
Yaw*	$\pm 25 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 40 \mu\text{rad}$
Compliance in Yaw	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$	0.2 $\mu\text{rad/Nm}$
Compliance in Roll	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$	0.3 $\mu\text{rad/Nm}$
Origin Repeatability	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$
Cable Length	5 m	5 m	5 m	5 m	5 m	5 m	5 m
Thread Type	M6	M6	M6	M6	M6	M6	M6
Width	280 mm	280 mm	280 mm	280 mm	280 mm	280 mm	280 mm
Weight	48 kg	55.1 kg	59.7	65	69.5	82.5	94
MTBF	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)
RoHS	Compliant	Compliant	Compliant	Compliant	Compliant	Compliant	Compliant

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IDL 560 Spec Table	IDL560-450LM	IDL560-600LM	IDL560-800LM	IDL560-1000LM
Travel Range	450 mm	600 mm	800 mm	1000 mm
Maximum Speed	2000 mm/s	2000 mm/s	2000 mm/s	2000 mm/s
Minimum Incremental Motion	0.050 μm	0.050 μm	0.050 μm	0.050 μm
Maximum Continuous Force	472 N	472 N	472 N	472 N
Maximum Peak Force	2830 N	2830 N	2830 N	2830 N
Centered Load Capacity	2000 N	2000 N	2000 N	2000 N
Accuracy*	$\pm 2.5 \mu\text{m}$	$\pm 3.0 \mu\text{m}$	$\pm 3.5 \mu\text{m}$	$\pm 4.3 \mu\text{m}$
Bi-directional Repeatability	$\pm 0.25 \mu\text{m}$	$\pm 0.25 \mu\text{m}$	$\pm 0.5 \mu\text{m}$	$\pm 0.5 \mu\text{m}$
Pitch	$\pm 33 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 45 \mu\text{rad}$	$\pm 55 \mu\text{rad}$
Compliance in Pitch	0.37 $\mu\text{rad/Nm}$	0.37 $\mu\text{rad/Nm}$	0.37 $\mu\text{rad/Nm}$	0.37 $\mu\text{rad/Nm}$
Yaw*	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 40 \mu\text{rad}$
Compliance in Yaw	0.1 $\mu\text{rad/Nm}$	0.1 $\mu\text{rad/Nm}$	0.1 $\mu\text{rad/Nm}$	0.1 $\mu\text{rad/Nm}$
Compliance in Roll	0.12 $\mu\text{rad/Nm}$	0.12 $\mu\text{rad/Nm}$	0.12 $\mu\text{rad/Nm}$	0.12 $\mu\text{rad/Nm}$
Origin Repeatability	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$	$\pm 0.1 \mu\text{m}$
Cable Length	5 m	5 m	5 m	5 m
Thread Type	M6	M6	M6	M6
Width	560 mm	560 mm	560 mm	560 mm
Weight	114 kg	124 kg	146 kg	159 kg
MTBF	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)	20,000 h (24% load, 30% duty cycle)
RoHS	Compliant	Compliant	Compliant	Compliant

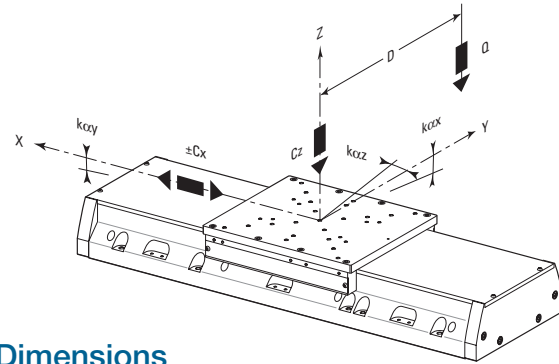
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Load Characteristics and Stiffness

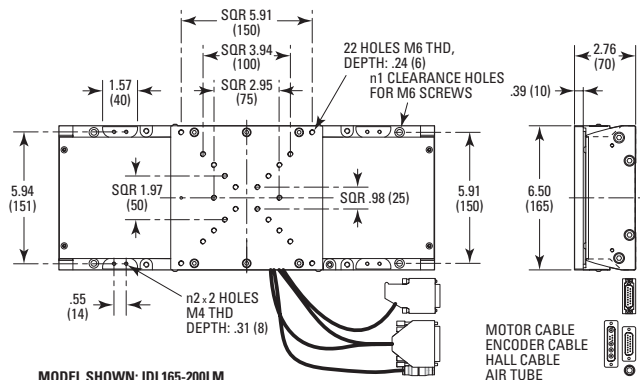
	IDL165-LM	IDL225-LM	IDL280-LM	DL560-LM
Cz, Centered load capacity (N)	450	1,000	1,500	2,000
kax, Angular stiffness [Roll] (Nm/μrad)	3.3	1.4	3.3	8.3
kay, Angular stiffness [Pitch] (Nm/μrad)	2.5	1.8	3.3	2.7
kaz, Angular stiffness [Yaw] (Nm/μrad)	2.5	3.3	5	10

Note: The max. values for the normal center load (Cz) and the off-center load (Q) are given in the graph located close to the dimension drawings.



Dimensions

IDL165-LM Stages



MODEL SHOWN: IDL165-200LM
DIMENSIONS IN INCHES (AND MILLIMETERS)

MOTOR CABLE
ENCODER CABLE
HALL CABLE
AIR TUBE

APPROX. LENGTHS: 177 (4500)

Recommended Controller/Drivers

XPS-Dx	1–8 axes universal high-performance motion controller/driver
XPS-RLDx	1–4 axes universal high-performance motion controller/driver
XPS-EDBL	High-power, 3-phase, sinusoidal DC brushless motor driver

Note : Performance is driver and motor dependent.

Ordering Information

Series	Width (mm)	Travel (mm)	Drive
IDL	165	100	LM
		200	
		300	
		400	
		450 ⁽¹⁾	
		500 ⁽²⁾	
	225	560	
		700 ^(2/3)	
		800 ⁽¹⁾	
	280	1000	
	560	1200	

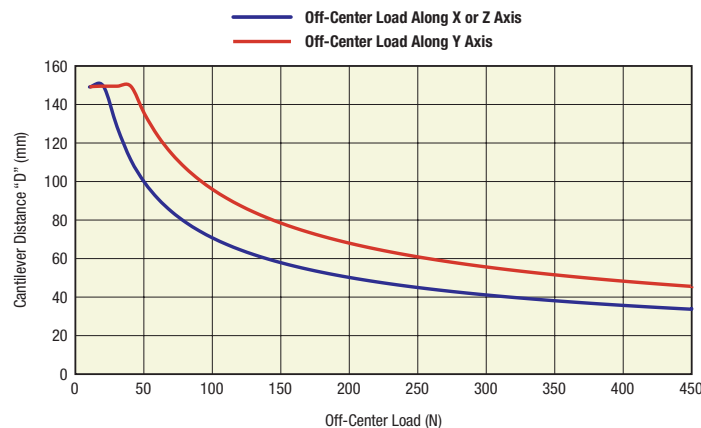
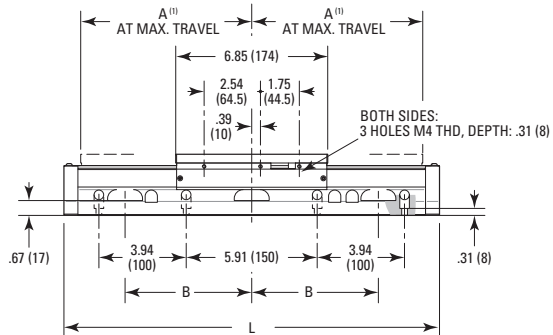
Example:
The **IDL225-600LM** is an IDL stage with 600 mm travel and a linear motor drive.

¹⁾ Only IDL560 stages.

²⁾ Except IDL560 stages.

³⁾ Except IDL225 stages.

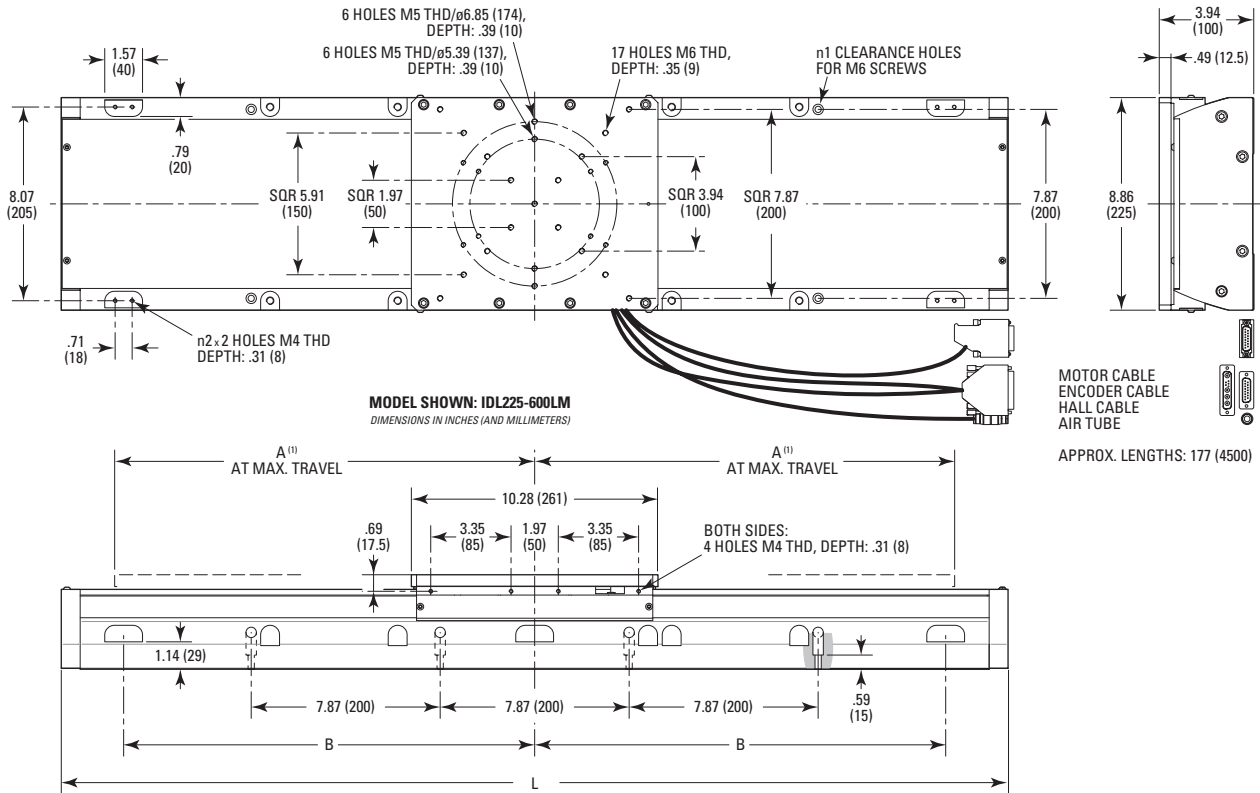
LM: Linear motor



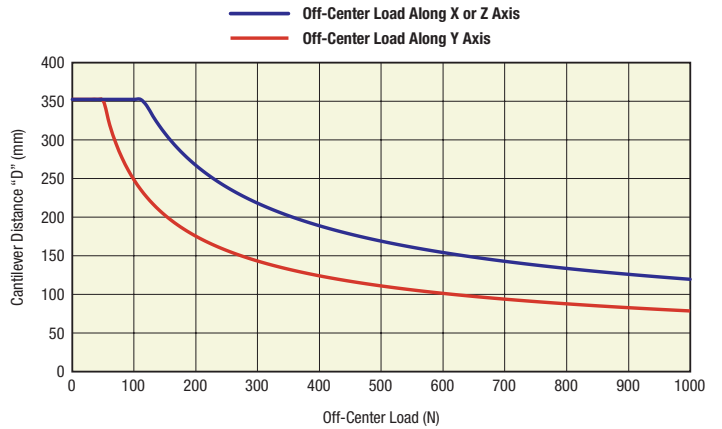
MODEL	TRAVEL	L	A ⁽¹⁾	n1	B	n2
IDL165-100LM	3.94 (100)	12.99 (330)	5.70 (144.8)	8	5.71 (145)	6
IDL165-200LM	7.87 (200)	16.93 (430)	7.67 (194.8)	8	5.71 (145)	6
IDL165-300LM	11.81 (300)	20.87 (530)	9.64 (244.8)	8	5.71 (145)	6

⁽¹⁾ INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

IDL-225-LM-Stages

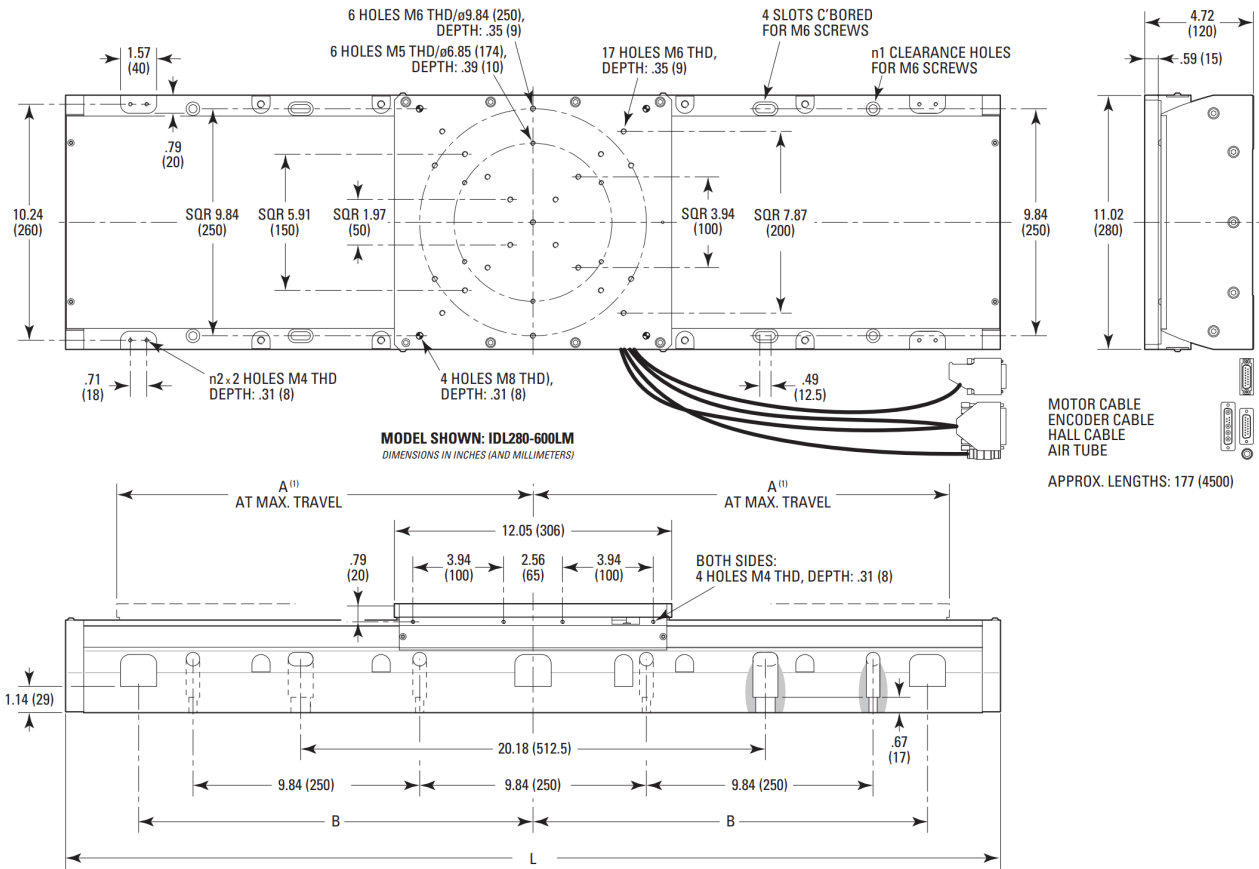


MODEL	TRAVEL	L	A ⁽¹⁾	n1	B	n2
IDL225-200LM	7.87 (200)	23.07 (586)	9.63 (244.5)	8	8.07 (205)	6
IDL225-300LM	11.81 (300)	27.00 (686)	11.59 (294.5)	8	8.07 (205)	6
IDL225-400LM	15.75 (400)	30.94 (786)	13.56 (344.5)	8	8.07 (205)	6
IDL225-500LM	19.69 (500)	34.88 (886)	15.53 (394.5)	8	8.07 (205)	6
IDL225-600LM	23.62 (600)	39.45 (1002)	17.50 (444.5)	8	17.13 (435)	6
IDL225-1000LM	39.37 (1000)	54.57 (1386)	25.37 (644.5)	12	17.13 (435)	6
DL225-1200LM	47.24 (1200)	63.07 (1602)	29.31 (744.5)	16	17.13 (435)	6



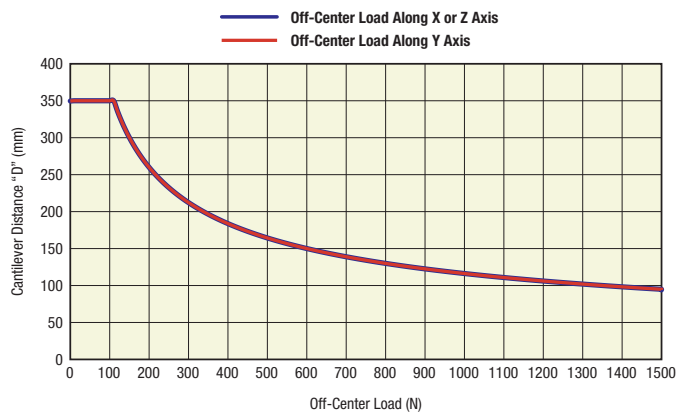
⁽¹⁾ INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

IDL280-LM Stages

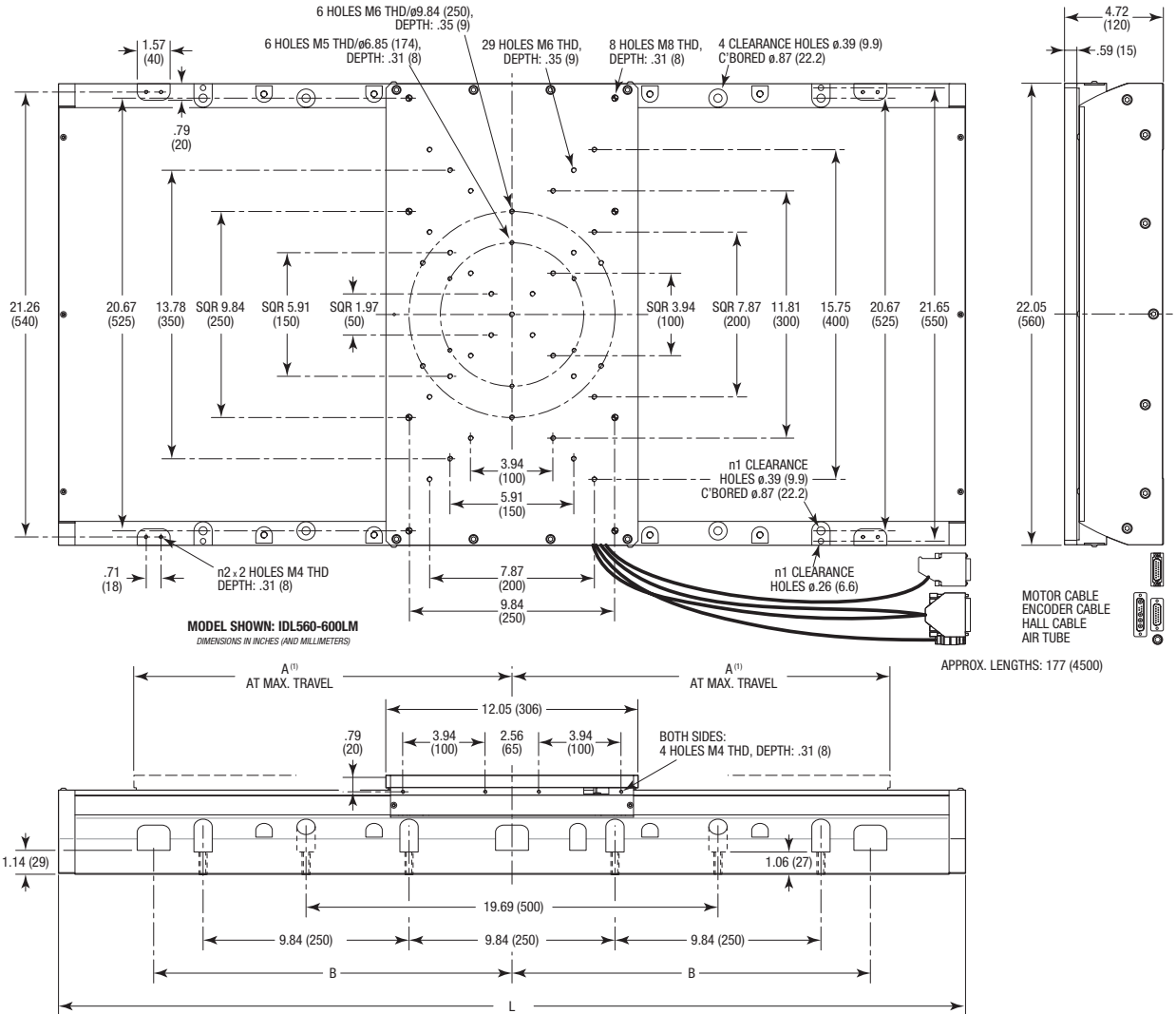


MODEL	TRAVEL	L	A ⁽¹⁾	n1	B	n2
IDL280-300LM	11.81 (300)	27.78 (731)	12.48 (317)	8	8.07 (205)	6
IDL280-400LM	15.75 (400)	32.72 (831)	14.45 (367)	8	8.07 (205)	6
IDL280-500LM	19.69 (500)	36.65 (931)	16.42 (417)	8	8.07 (205)	6
IDL280-600LM	23.62 (600)	40.59 (1031)	18.39 (467)	8	17.13 (435)	6
IDL280-700LM	27.56 (700)	44.53 (1131)	20.35 (517)	8	17.13 (435)	6
IDL280-1000LM	39.37 (1000)	56.34 (1431)	26.26 (667)	12	17.13 (435)	6
IDL280-1200LM	47.24 (1200)	64.21 (1631)	30.20 (767)	12	17.13 (435)	6

⁽¹⁾ INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.



IDL560-LM Stages



MODEL	TRAVEL	L	A ⁽¹⁾	n1	B	n2
IDL560-450LM	17.72 (450)	39.41 (1001)	15.43 (392)	8	8.07 (205)	6
IDL560-600LM	23.62 (600)	43.35 (1101)	18.39 (467)	8	17.13 (435)	6
IDL560-800LM	31.50 (800)	51.22 (1301)	22.32 (567)	8	17.13 (435)	6
IDL560-1000LM	39.37 (1000)	59.09 (1501)	26.26 (667)	12	17.13 (435)	6

⁽¹⁾ INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

